

REMARKS

Claims 1-9, 11, 12, 14-20, and 31-38 were pending. Claims 1, 2, 3, 12, 15, 18, 37, and 38 have been amended. Claims 39 and 40 have been added. Claims 1-9, 11, 12, 14-20, and 31-40 are pending.

Claims 1-9, 11, 12, 14-20, and 31-38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over applicant's admitted prior art (APA) in combination with U.S. Pat. Appl. No. 2002/0062923 to Forray. Applicant respectfully traverses this rejection.

Claim 1 recites a semiconductor device assembly comprising "a solder mask over a substrate," "a die," "conductive paths connecting contacts on said die with contacts in said substrate," and "a partially-cured adhesive layer adhering said die to said solder mask, said partially-cured adhesive layer comprising one or more adhesive components that cure at or below 100°C."

APA discloses a semiconductor device assembly having conductive paths connecting contacts on a die with contacts in a substrate. APA contains no teaching or suggestion, however, of a semiconductor device assembly having "a partially-cured adhesive layer adhering said die to said solder mask, said partially-cured adhesive layer comprising one or more adhesive components that cure at or below 100°C," as admitted in the Office Action. Claim 1 is patentable over APA.

Forray does not cure the deficiencies of APA. Forray discloses adhesives and methods used in semiconductor device manufacture. The adhesive is subjected to a single curing step at a temperature sufficient to cure the adhesive. See paragraph 29. Thus, Forray contains no teaching or suggestion of a semiconductor device assembly having "conductive paths connecting contacts on said die with contacts in said substrate," and "a partially-cured adhesive layer adhering said die to said solder mask." On the contrary, the single step curing method disclosed by Forray teaches away from such an assembly. Forray does not combine with APA to obviate a semiconductor device assembly having "a solder mask over a substrate," "a die," "conductive paths connecting contacts on said die with

contacts in said substrate,” and “a partially-cured adhesive layer adhering said die to said solder mask, said partially-cured adhesive layer comprising one or more adhesive components that cure at or below 100°C.” Claim 1 is patentable over the proposed combination of APA in view of Forray. Claims 2-4, 6-9, 11, 33-34, 37, and 39 depend from claim 1 and are patentable over APA in view of Forray for at least the same reasons.¹

Claim 12 recites a semiconductor device assembly comprising “a solder mask on a substrate,” “a die,” “electrical contacts on said substrate and said die, each said contact on said die being connected to a respective said contact on said substrate, said electrical contacts being devoid of contamination caused by outgassing from said solder mask,” and “a partially-cured adhesive layer affixing said die to said solder mask, said partially-cured adhesive layer containing one or more adhesive components that cure at or below 100°C.”

As admitted in the Office Action, APA does not teach or suggest a semiconductor device assembly having “a partially-cured adhesive layer affixing said die to said solder mask, said partially-cured adhesive layer comprising one or more adhesive components that cure at or below 100°C,” as admitted in the Office Action.

Forray does not cure the deficiencies of APA. Rather than teaching or suggesting a semiconductor device assembly having “a partially-cured adhesive layer affixing said die to said solder mask,” Forray discloses a one-step method of curing the adhesive. Consequently, Forray teaches away from a semiconductor device assembly comprising “a solder mask on a substrate,” “a die,” “electrical contacts on said substrate and said die, each said contact on said die being connected to a respective said contact on said substrate, said electrical contacts being devoid of contamination caused by outgassing from said solder mask,” and “a partially-cured adhesive layer affixing said die to said solder mask.” Claim 12 is patentable over the proposed combination of APA in view of Forray.

¹ Applicant respectfully disagrees with the supposed waiver of subject matter related to “an encapsulant over a die” as asserted in the Office Action. There has been no Official Notice taken of a semiconductor device assembly comprising “an encapsulant molded over a die” having “conductive paths connecting contacts on said die with contact in said substrate” and “a partially-cured adhesive layer adhering said die to said solder

Claims 14-20, 35, 36, 38, and 40 depend from claim 12, and are patentable over APA in view of Forray for at least the same reasons.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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